

Attorney Docket Number: OMG/129/US

sectional area of the shaft [in] along the cylindrical upper region is greater than the cross sectional area of the shaft [in] along the cylindrical lower region, the number of threads per unit length in the upper region are at least twice the number of threads per unit length in the lower region, and wherein the upper region has an inverted buttress thread configuration.

REMARKS

This Amendment is being filed under 37 C.F.R. §1.116 governing Amendment After Final Rejection. As discussed above, Applicants believe the finality of the rejection should be withdrawn. However, this Amendment is appropriate for entry under Rule 116, since it does not raise new issues and places the application in allowable condition and/or places the application in better condition for appeal.

This After Final Response is being filed in response to the Office Action, dated March 10, 2003. No new claims have been added. Claims 1, 12, 23, 34, 45, 52, 59, 68, and 94 have been amended. The amendment to the claims adds no new matter. Upon entry, at the discretion of the Examiner, claims 1-8, 10-32, 34-42, 44-48, 50-55, 57-64, 66-97, 99-104, 106-110, 113, and 119 will be pending in the application.

Claim Rejections Under 35 U.S.C. §102

Claims 1, 2, 12, 13, 20, 23 and 30 have been rejected under 35 U.S.C. §102(b) as being anticipated by Hsing (U.S. Patent No. 6,045,312).

Independent claims 1, 12, and 23 have been amended to clarify the claimed invention. Applicants note the Examiner's position with regard to Hsing, wherein the Examiner has asserted that Hsing discloses an upper region and a lower region having differing cross sectional areas. As amended, claims 1, 12, and 23 are not anticipated by the Hsing reference since the Hsing reference does not disclose a substantially cylindrical threaded lower region wherein a cross sectional area along the upper cylindrical upper region is greater than the cross sectional area of the shaft along the

Attorney Docket Number: OMG/129/US

cylindrical lower region. As amended, claims 1, 12, and 23 are patentable, as are those claims that depend either directly or indirectly from claims 1, 12, and 23.

Applicants recognize that entry of an Amendment is not a matter of right but is at the discretion of the Examiner. MPEP 714.13. The Applicants believe that the present Amendment to claims 1 and 23 is fully adoptive of the Examiner's understanding of the invention and prior art based on the Office Action of March 10, 2003, paragraph 3, and therefore requires only a cursory review by the Examiner in light of that understanding.

Claim Rejections Under 35 U.S.C. §103

Claims 1, 3-8, 11, 45, 46, 51-53, 55, 58-62, 64 and 67 have been rejected under 35 U.S.C. §103. Independent claims 1, 23, 34, 45, 52, and 59 have been amended.

To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2143.

As thoroughly discussed in a recent court holding,

"...the essential factual evidence on the issue of obviousness is set forth in Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966) and extensive ensuing precedent. The patent examination process centers on prior art and the analysis thereof. When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the Graham factors)." In re Lee, 61 USPQ2d, 1430 (Fed. Cir. 2002).

The expectation of success is not whether it would have been obvious to try a

Attorney Docket Number: OMG/129/US

modification or combination. Gillette Co. v. S.C. Johnson & Son, Inc., 919 F.2d 720, 725 (Fed. Cir. 1990).

A prior art reference or combined references must teach or suggest all of the limitations of a claim to be prior art under §103. In re Wilson, 165 USPQ 494, 496 (C.C.P.A. 1970).

The rejection under 35 U.S.C. §103 with regard to claims 1, 3-8, 11, 45, 46, 51-53, 55, 58-62, 64 and 67 relies on the assertion that "Hsing teaches a shaft having a greater cross sectional area in the upper region 120, which refers to the entire upper region of the shaft, (also labeled as "U" on the Figure above), than the cross sectional area of the shaft in the lower region 100".

As amended, the assertion for the rejection under 35 U.S.C. §103 of the claims does not apply. Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region. This is clear from the figure included on page three of the Office Action mailed March 10, 2003. In that Figure the section identified as "the lower region" is not a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

As such, the rejection under 35 U.S.C. §103 is improper as to amended claims 1, 23, 34, 45, 52, and 59, as well as the claims dependent from 1, 23, 34, 45, 52, and 59.

Rejection of Claims 10, 21, 31, 34, 35, 42, 50, 57, 66, 68, 80, 94, and 106 Improper

Claims 10, 21, 31, 34, 35, 42, 50, 57, 66, 68, 80, 94, and 106 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hsing as applied to claims 1, 12 and 23 in view of De Caro (U.S. Patent No. 4,959,938)

It is a well-established "general rule" that references that teach away cannot serve to create a *prima facie* case of obviousness. In re Gurley, 27 F3d 551, 553, 31 USPQ2d 1131, 1132 (Fed. Cir. 1994). A "reference will teach away if it suggests that

Attorney Docket Number: OMG/129/US

the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the Applicant." Winner Int'l Royalty Corp. v. Wang, 202 F.3d 1340 (Fed. Cir. 2000) citing Gurley at 553; Monarch Knitting Machinery v. Sulzer Morat GmbH, 139 F.3d 877, 882 (Fed. Cir. 1998).

The De Caro reference expressly teaches and suggests a line of development flowing toward fastener/plate assemblies. The assembly has a fastener and plate used together to accomplish the objects set forth in De Caro. This clearly is a line of development unlikely to be productive in achieving the result of among other things eliminating substrate displacement as sought by the Applicants. As such, De Caro teaches away from the claimed invention. Winner, citing Gurley at 553; Monarch Knitting Machinery, at 882. Therefore, the rejection under 35 U.S.C. §103 is improper.

Rejection of Claims 10, 21 and 31 Improper

As discussed above, the Hsing patent does not properly serve as a basis of rejection for claims 1, 12 and 23. Therefore, dependent claims 10, 21 and 31 are not properly rejected using the Hsing reference since, among other things, Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

Rejection Of Claim 34 Improper

Claim 34 has been amended to include a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region, and therefore, as stated above, the Hsing reference does not serve as a proper basis of rejection for claim 34 for at least the reason that Hsing does not, among other things, teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

Attorney Docket Number: OMG/129/US

Rejection of Claim 42 Improper

Claim 42 depends directly on claim 34. Therefore, rejection as to claim 42 is improper for at least the reason that Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

Rejection of Claim 50 Improper

Claim 50 depends directly on claim 45. Therefore, rejection as to claim 45 is improper for at least the reason that Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

Rejection of Claim 57 Improper

Claim 57 depends directly on claim 52. Therefore, rejection as to claim 57 is improper for at least the reason that Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

Rejection of Claim 66 Improper

Claim 66 depends directly on claim 59. Therefore, rejection as to claim 66 is improper for at least the reason that Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

Rejection of Claim 68 Improper

Rejection of claim 68 is improper since claim 68 recites in a pertinent part a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region and therefore for at least the reason that Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region, claim 68 is not properly rejected using the Hsing reference.

Rejection of Claim 80 Improper

Claim 80 depends on claim 68 and is non-obvious for at least the reason that Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

Rejection of Claim 94 Improper

Claim 94 recites the shaft with a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region, and a rejection of claim 94 under § 103 is improper for at least the reason that Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

Rejection of Claim 106 Improper

Claim 106 depends from claim 94. As stated above, the Hsing reference does not properly serve for a rejection of claim 94 for at least the reason that Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross

Attorney Docket Number: OMG/129/US

sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region. Therefore, a rejection of claim 106 is improper.

35 U.S.C. §103(a) Rejection of Claims 50, 57, and 66 Improper

Claims 50, 57, and 66 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Takasaki as applied to claims 45, 52 and 59 in further view of De Caro.

Claim 50 depends from claim 45, which has a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region. The Takasaki reference does not teach or suggest at least this claimed feature, and therefore a proper rejection under 35 U.S.C. §103 does not apply.

Claim 57 depends directly from amended claim 52. Claim 52 recites in a pertinent part a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region. As such, a rejection of claim 57 is improper under 35 U.S.C. §103.

Claim 66 depends from claim 59 having a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region, and therefore a proper rejection under §103 does not apply for at least the reason that Takasaki does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

35 U.S.C. §103(a) Rejection of Claims 14-18, 22, 24-28, and 32 Improper

Claims 14-18, 22, 24-28, and 32 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hsing reference as applied to claims 12 and 23 in view of Takasaki.

Attorney Docket Number: OMG/129/US

As discussed above, the Hsing reference has been improperly applied as to claims 12 and 23 for at least the reason that Hsing does not teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region. Furthermore, in the rejection it is stated that “Hsing fails to disclose a bottom surface having a V-shaped undercut, the undercut having a conical surface that connects the lip with the conical side of head. . . .”. It is then asserted that Takasaki teaches all of these features of the head and that it would have been obvious at the time the invention was made to a person of ordinary skill in the art to modify the teaching of Hsing with the teaching of Takasaki to yield the claimed invention.

Modification of Takasaki Taught Against

Applicants respectfully contend that the modification or combination asserted in the Office Action is taught directly against in the Hsing reference and therefore a rejection under 35 U.S.C. §103 is improper for at least the well-established “general rule” that references that teach away cannot serve to create a *prima facie* case of obviousness. Winner v. Wang. In particular, the bottom surface in the Hsing reference is referred to as a clamping surface 84, and comes into contact with the surface 50. The Hsing reference at column 1, lines 21-29, states that a clearance hole is formed in the piece to be fastened through which the shank may pass freely. It is clear that a conical sided head in the modified Hsing reference would cause deformation in the piece to be fastened from the penetration of the conical head into the piece. Furthermore, a significant change to the torque time profile, as disclosed in Figure 2B would occur. For at least these reasons, there is clearly a teaching away from the modification or combination asserted in the Office Action, and a rejection under 35 U.S.C. §103 is improper.

In addition, the configuration suggested by the modification in the Office Action of incorporating at least a conical sided head would require a substantial reconstruction and redesign of the elements shown in the Hsing reference as well as a change in the

Attorney Docket Number: OMG/129/US

basic principle under which the Hsing construction was designed to operate and is improper for at least this additional reason. See In re Ratti, 270 F.2d 813, 123 USPQ 352 (CCPA 1959).

35 U.S.C. §103(a) Rejection of Claims 19 and 29 Improper

Claims 19 and 29 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hsing, as applied to claims 12 and 23 above in further view of Dreger '954 patent. It is asserted that Hsing fails to disclose the top surface of the head being provided with a #2 square opening and that Dreger teaches a screw with a head having a #2 square opening for accommodating a #2 Robinson driver. Also, it would have been obvious at the time the invention was made to modify Hsing by adding a #2 square opening in the head as disclosed in Dreger by a person of ordinary skill in the art. As discussed above, the Hsing reference fails to teach or suggest at least a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region, and for at least the reason all the claimed elements are not present, a proper rejection under 35 U.S.C. §103 cannot be made.

35 U.S.C. §103(a) Rejection of Claims 47, 54, and 63 Improper

Claims 47, 54, and 63 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the Takasaki as applied to claims 45, 52 and 59 in further view of Dreger. It is asserted that the Takasaki reference fails to disclose a top surface of the head being provided with a #2 square opening and that it would have been obvious to at the time the invention was made to the person of ordinary skill in the art to modify teaching of Takasaki by adding a #2 square opening as disclosed in Dreger.

Claims 45, 52, and 59 have been amended to include a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region. Claims 47, 54, and 63 are respectively dependent directly from those claims and are

Attorney Docket Number: OMG/129/US

patentable for at least the reason that Takasaki does not at least teach or suggest a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region.

35 U.S.C. §103(a) Rejection of Claims 36-40, 44, 69-73, 81-86, 93, 95-97, 99, 107-110, and 119 Improper

Claims 36-40, 44, 69-73, 81-86, 93, 95-97, 99, 107-110, and 119 have been rejected under 35 U.S.C. §103 as being unpatentable over Hsing and De Caro as applied to claims 34, 68 and 94 in further view of Takasaki. It is asserted that it would have been obvious at the time the invention was made to a person of ordinary skill in the art to modify the teaching of Hsing as modified by De Caro with the teachings of the head and tip in Takasaki. In addition, it was asserted that the De Caro teaches a screw having an upper region with an inverted buttress configuration to secure the screw into the surface.

The Takasaki reference is specific in stating that the first thread angle is smaller than the second thread angle, at column 1, lines 59-60. It is well known in the art (see GE Plastics enclosure submitted in the Applicants December 4, 2003 Response to Office Action) that a buttress thread has a surface which is substantially perpendicular to the central axis of a fastener. As such, to provide a first thread angle which is smaller than the second thread angle wherein the second thread angle would be located in the upper region would be improper based on at least the Takasaki requirement that the first thread angle not more than 45 degrees and second thread angle be equal to or greater than 80 degrees. Takasaki, column 2, lines 23-68. Therefore, a proper rejection under 35 U.S.C. §103 does not stand for at least the reason that there is no motivation or suggestion to modify the Takasaki reference as suggested in the Office Action.

In addition, claims 36-40, and 44 depend on claim 34, claims 69-73, 81-86, 93, 95-99, and 99 depend on claim 68, and claims 107-110, and 119 depend on claim 94. Claims 34, 68, and 94 have at least a substantially cylindrical threaded lower region

Attorney Docket Number: OMG/129/US

wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region. As discussed above, not taught or suggested in the combination asserted in the rejection, is a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region. For at least this additional reason, a 35 U.S.C. §103 rejection of the claims is improper.

35 U.S.C. §103(a) Rejection of Claims 41, 74, and 100 Improper

Claims 41, 74, and 100 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hsing and De Caro as applied to claims 34, 68, and 94 in further view of Dreger (United States Patent No. 5,020,954). Stated above, the Hsing and De Caro combination may not be correctly applied to claims 34, 68 and 94 as amended. As such, a rejection under 35 U.S.C. §103(a) of claims 41, 74, and 100 is improper on at least this basis.

35 U.S.C. §103(a) Rejection of Claims 75-79, 88-92, and 101-104 Improper

Claims 75-79, 88-92, and 101-104 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hsing, De Caro and Takasaki as applied to claims 34, 36-40, 68-73, 81-86, and 93-99 further in view of Dreger. As discussed above, the Hsing reference modified by De Caro and Takasaki combination is improper for at least the reasons stated above, wherein the asserted combination does not have a substantially cylindrical threaded lower region wherein a cross sectional area along the cylindrical upper region greater than the cross sectional area of the shaft along the cylindrical lower region. Furthermore, modification of the Hsing head configuration by Takasaki defeats the purpose of the Hsing invention as discussed above. For at least these reasons, a proper rejection under 35 U.S.C. §103 has not been made.

Attorney Docket Number: OMG/129/US

35 U.S.C. §103(a) Rejection of Claims 87 and 113 Improper


Claims 87 and 113 have been rejected under 35 U.S.C. §103 as being unpatentable over Hsing, De Caro and Dreger as applied to claims 74, and 100 in further view of Takasaki.

As discussed above, the combination of Hsing, De Caro, and Dreger is improper as applied to claims 74 and 100. Therefore, a proper rejection under 35 U.S.C. §103(a) for claims 87, and 113 does not exist.

In summary, Applicants have addressed each of the rejections within the present Office Action either by Amendment or Remarks. It is believed the application now stands in condition for allowance, and prompt favorable action thereon is earnestly solicited.

Respectfully submitted,

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